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PRODUCTION OF HYDROGEN SULFIDE BY INTESTINAL
BACILLI IN DIFFERENT GROWING MEDIA

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PRODUCTION OF HYDROGEN SULFIDE BY INTESTINAL
BACILLI IN DIFFERENT GROWING MEDIA

- USSR -

Following is the translation of an article by A. A. Shemyakina in the Russian-language publication Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii (Journal of Microbiology, Epidemiology, and Immunobiology), No 11, 1963, pages 74-76.

From the Dorozh Sanitary-Epidemiological
Station of the Sverdlovsk Railway

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The ability to produce hydrogen sulfide during life activity is as we know one of the differentiating characteristics for various microorganism representatives of the intestinal family.

It is widely accepted that numerous representatives of the genus *Escherichia*, and also *Salmonella* produce hydrogen sulfide, but all species of dysentery bacilli do not have this capability. However, several investigators (Shtiben, Pik-Levontin, Smirnov, and Trifonov) have pointed to the ability of certain strains of dysentery bacilli to form hydrogen sulfide. In our study, using for the purpose of determining hydrogen sulfide production a broth prepared from placenta (with the addition of one per cent peptone and 0.5 per cent sodium chloride) have also noted the presence of hydrogen sulfide in certain strains of dysentery bacilli.

Several experiments were set up to study this problem, aimed at discovering what effect the nutrient medium has on the formation of hydrogen sulfide by various representatives of the intestinal family of microorganisms.

Nutrient media included meat-peptone broth, one per cent peptone water, Hottinger broth, and placental broth, prepared in the usual formulations. Innoculation was performed simultaneously on all media using a single loop of day-old agar culture and maintained at 37 degrees. The record of result was entered daily for

three days. The presence of hydrogen sulfide was determined by the darkening of filter paper moistened with a 4 per cent solution of lead acetate secured under the stopper of a tube containing 5 ml of the inoculated medium being tested. Simultaneously, three test tubes containing uninoculated medium being tested and the same indicator paper strips was maintained under the same conditions.

In all 6 experiments were performed, and 50 cultures were tested for the presence of hydrogen sulfide: 22 cultures of dysentery bacillus, 11 pathogenic types of intestinal bacillus (026, 055, 0111) 14 cultures of intestinal bacillus isolated from water and rinsings, 2 cultures of Breslav bacillus, and 1 cultures of paratyphoid bacillus. All the cultures were purified beforehand through two- three-fold inoculation. All these were typical in cultural- biochemical and serological properties.

Formation of Hydrogen Sulfide by Cultures of Microorganisms of the Intestinal Family on Various Media

| Нанесение культуры | Число культур | (+) | | (-) | | (+) | | (-) | | (+) | | (-) | |
|-------------------------------------|---------------|-------------------------|-------------------------|------------------|----------------|-------------------|----------------|-------------------|----------------|-------------------|----------------|-------------------|----|
| | | бульон из пла. центы | бульон Ноттинг. гера | Ноттинг. гера | мят. пепто. | 1% пепто. воды | |
| Диацентерийная | 22 | 13 | 9 | 0 | 22 | 0 | 22 | 0 | 22 | 0 | 22 | 0 | 22 |
| Кишечные палочки, патоген. ные | 11 | 9 | 2 | 1 | 10 | 2 | 9 | 0 | 0 | 0 | 11 | 0 | 11 |
| Кишечные палочки, непато- генные | 14 | 13 | 1 | 9 | 5 | 3 | 11 | 3 | 3 | 3 | 11 | 0 | 11 |
| Сальмонеллы | 3 | 3 | 0 | 3 | 0 | 2 | 1 | 3 | 3 | 3 | 0 | 0 | 0 |
| | | | | | | | | | | | | | |
| (m) | 50 | 38 | 12 | 13 | 37 | 7 | 43 | 6 | 44 | | | | |
| Всего | | 76 | 24 | 27 | 73 | 14.6 | 85.4 | 12.5 | 87.5 | | | | |

Symbols: + positive result; - negative.
 LEGEND: a) culture; b) number of cultures; c) results of seeding on different media; d) placental broth; e) Nottinger broth; f) meat-peptone broth; g) 1% peptone water; h) dysentery; i) intestinal bacilla, pathogenic; j) intestinal bacilla, nonpathogenic; k) salmonella; l) absolute; m) total.